PANORAMA dtv
DIGITAL VIDEO SOLUTIONS

RM-2440

Document P/N **821574** Rev-**C**

2U Quad LCD Video Monitor

with Four 4" LCD Video Displays,
Eight Composite Video Inputs (on BNC)
with A/B Switching, Eight Loop-Through
Outputs (on BNC), and Option for
Adding SDI Inputs

User Manual

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Important Safety Instructions

1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with dry cloth.
7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat source such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cord from being walked on or pinched, particularly at plugs convenience receptacles and the point where they exit from the apparatus.
11) Only use attachments/accessories specified by the manufacturer.
12) Use only with the cart stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13) Unplug this apparatus during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15) Do not expose this apparatus to rain or moisture.
16) The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

CAUTION!

In products featuring an audio amplifier and speakers, the surface at the side of the unit, where the audio amplifier heat sink is internally attached, may get very hot after extended operation. When operating the unit excercise caution when touching this surface and ensure that external materials which may be adversely affected by heat are not in contact with it. There is a Hot Surface label (see diagram) attached to the aforementioned surface of the product.

Introduction

Congratulations on your selection of a PANORAMAdtv product. We are confident it represents the best performance and value available, and we guarantee your satisfaction with it.

If you have questions or comments you may contact us at:

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Section 1

General Features and Specifications

Installation

Description

Features

Applications

Specifications

Options

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PANORAMAdtv
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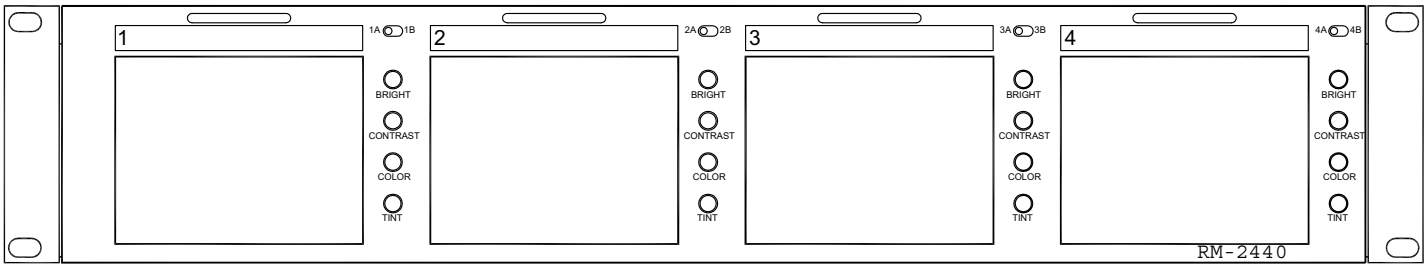
RM-2440

2U Quad LCD Analog/SDI Video Monitor



RM-2440 Front Panel

Description

The **RM-2440** is a color video monitor in a 2RU chassis containing four 4" (100mm) Active Matrix TFT LCD displays. Each LCD is back lit with a cold cathode fluorescent tube. The LCD's are mounted in a rotatable cylinder, which allows the operator to rotate the display array ±55° in the vertical plane to provide optimum operator viewing angles. Each LCD display has separate controls for brightness, contrast, color, and tint (NTSC only).

The standard **RM-2440** features two **composite analog** (**CVBS**) video inputs per LCD display for a total of eight inputs (**NTSC** and **PAL** autosensing). One of the two inputs (per display) is selected using a front panel A/B switch. Each of the eight **CVBS** video inputs has a passive loop-through on a BNC connector and a 75 Ohm/Hi-Z termination select switch.

SDI signals may be monitored with installation of a field-installable option (one per display). There are two models of optional **SDI Input Module**; the **RMSDI-1** and **RMSDI-2**. The **RMSDI-2** features an **SDI input**, a reclocked **SDI output**, a *converted* (from **SDI**) **CVBS output,** an **SDI Lock** indication LED**,** and autosensing of **NTSC/PAL** signal formats. The **RMSDI-1** offers a somewhat reduced feature set for cost savings and is identical except that it lacks the **SDI Output** and requires manually setting a switch for **NTSC/PAL** formatting. Each installed **SDI Input** module disables the second (or **B**) **CVBS** video input in the section in which it is installed. Selection of the **SDI Input Module**(s) is accomplished using the appropriate front panel A/B switch.

Each display also features a tri-color (red/green/yellow) tally LED indicator. A DB-25 connector on the rear panel is used to interface the **RM-2440** with your facilities tally system. An optional field-installable audio indication module (**AIM-1**) can be plugged into the tally connector in order to use the **RM-2440** tally LEDs for indication of audio presence and loss.

Features

- Compact 2U rack size and lightweight
- Quad 4" LCD color video monitor
- Adjustable screen angle for efficient viewing
- Eight composite video inputs with loop-through (two per display)
- Front panel A/B switching (one per display)
- Dual standard NTSC/PAL auto-sensing
- Controls for brightness, contrast, color, and tint (NTSC only)
- Four Red/Green/Yellow tally lights (one per display)
- Minimal power dissipation for low operating temperatures
- Low power consumption
- External power supply
- Optional (field installable) SDI input module(s) (**RMSDI-1** and **RMSDI-2**) with SDI input, reclocked SDI output, converted CVBS output, and autosensing of NTSC/PAL formats
- Optional (field installable) audio indication module (**AIM-1**) for using the RM monitor tally lights to indicate audio presence or loss.

Applications

The **RM-2440** is ideal for confidence video monitoring of multiple video feeds for mobile trucks, news and transmission control rooms, duplication and post production applications. Built and rigorously tested in the USA, the **RM-2440** is backed by a strong warranty (see page **2**) and a "Satisfaction Guaranteed" return policy.

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Specifications

Video Input:	Eight composite (CVBS) video inputs (two per screen) with A/B select. Each screen has provisions for an optional input module as the "B" input.
Video Input Termination:	Selectable 75 ohm termination
Video Output:	Eight loop-through composite video outputs (two per screen)
Screen Type / Size:	Active matrix TFT-LCD / 4" diagonal
Source Selection:	A/B Selection of 2x CVBS IN (or 1x CVBS & 1x SDI module) per screen
Display Modes:	NTSC/PAL autosensing
Aspect Ratio:	4:3
Picture Controls:	Brightness, chroma, tint (NTSC only), contrast
Resolution (dots x lines):	960 x 234
Dot Pitch:	0.171 x 0.264 mm
Color Configuration:	RGB stripe
Viewing Angle:	top = 10 degrees, bottom = 30 degrees left = 45 degrees, right = 45 degrees
Contrast Ratio:	150 (typical)
Brightness:	300 NITs (cd/m^2)
LCD Lamp Life (at 50% of life):	10,000 hours (minimum) 15,000 hours (average)
Power Consumption:	24 watt (typical) 42 watt (max)
Power Supply:	110/220 VAC-12VDC, external power supply (included)
Chassis Type:	2U, 19" rack mounting (EIA-310D)
Dimensions:	18.8"W x 3.2"D x 3.4"H (483 x 81 x 89 mm)
Weight:	6 pounds (2.72 kg)

Options

RMSDI-1 (SDI) Input Option

Field installable SDI input module with SDI input, composite output of SDI input, SDI Lock LED, and manual NTSC/PAL switch

RMSDI-1 (SDI) Input Option

Field installable SDI input module with SDI input, SDI Re-clocked output, composite output of SDI input, SDI Lock LED, and automatic NTSC/PAL sensing

AIM-1 Audio Indication Option

Field Installable Audio Indication Module (plugs into rear D-SUB and uses tally LEDs). Contact **PANORAMAdtv** directly for more information about this optional feature.

Call **PANORAMAdtv** or your distributor for ordering details on any of the options available for the **RM-2440**.

Units are designed to meet, at time of manufacture, all currently applicable product safety and EMC requirements, such as those of UL and CE. Features and specifications subject to improvement without notice.

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Installation

Unpacking

Unpack the **RM-2440** unit from the shipping container and inspect all articles for shipping damage. If you find any damage, notify the shipping carrier immediately for claims adjustments. Compare the shipping box contents to the packing slip. Contact our PANORAMAdtv sales representative if there are any unexplained shortages.

Cooling and Airflow

No special physical mounting considerations are necessary regarding unit heat dissipation except under adverse conditions. Provided the ambient temperature inside the mounting enclosure does not exceed 40 degrees Celsius (104 degrees Fahrenheit), adjacent devices can be rack mounted (or stacked) in proximity to the **RM-2440** unit. If the above temperature is exceeded, allow a 1RU (1.75”/25mm) space above and below the unit for air circulation.

Rack Mounting

The **RM-2440** unit rack mounts in a standard EIA-310-D specification 19”/483 mm rack and needs only 2RU of space. Allow sufficient space at the unit rear for connector and cable clearance (approximately 4”/102mm). The **RM-2440** unit rack mounts from the front panel support rails. Rear support is not required.

See **Figure-2c** on page **12** for **RM-2440** rack, standard connector, and optional **RMSDI** module connector clearance dimensions.

General Installation Recommendations

Recommended Cables: Recommended cable type for Composite (analog) or SDI video signals is: **Belden 1694A** (or equivalent).

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Section 2

Operation

Front Panel Features

Rear Panel Features

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Front Panel Features

Please refer to **Figure-2a** on the following page to familiarize yourself with the front panel features of the **RM-2440** unit. The following sections describe these features and are referenced, by number, to **Figure-2a**.

1 LCD Video Display (1-4)

View input video sources here. Select one of two source inputs for each display by setting the **A/B Source Select Switch** (**Item 4**) to the desired input. Screen image parameters are adjustable by four manual controls (**Item 2**).

2 LCD Video Display Controls (1-4)

Each LCD video display can be adjusted separately using these four image controls:

- **BRT - Brightness**; adjust for desired screen brightness.
- **CNT - Contrast**; adjust for desired image scene, dark-to-bright contrast.
- **COL - Color Saturation**; adjust for desired amount of image color saturation.
- **TNT - Tint (Hue)**; adjust for desired image color hue (NTSC only).

3 Tally Indication LED (1-4)

This tri-color LED can glow RED, GREEN, or YELLOW to indicate tally status associated with the signal displayed. Refer to pages **14** and **15** for tally connection details.

An optional audio indication module (**AIM-1**) may be installed into the **Tally Control Connector** on the rear panel (**Item E**, page **10**), which allows these LEDs to act as audio indicator lights. Please contact **PANORAMAdtv** for more information about this optional feature.

4 A/B Source Select Switch (1-4)

In a standard configuration, this switch selects between the primary **CVBS** (**A**) and secondary **CVBS** (**B**) video source inputs for the associated **I/O Section**.

If an optional input module (**RMSDI-1** or **RMSDI-2**) is installed in an **I/O Section**, the associated switch selects between the primary **CVBS Input** (**A**) source and the *installed* optional input video source (**B**).

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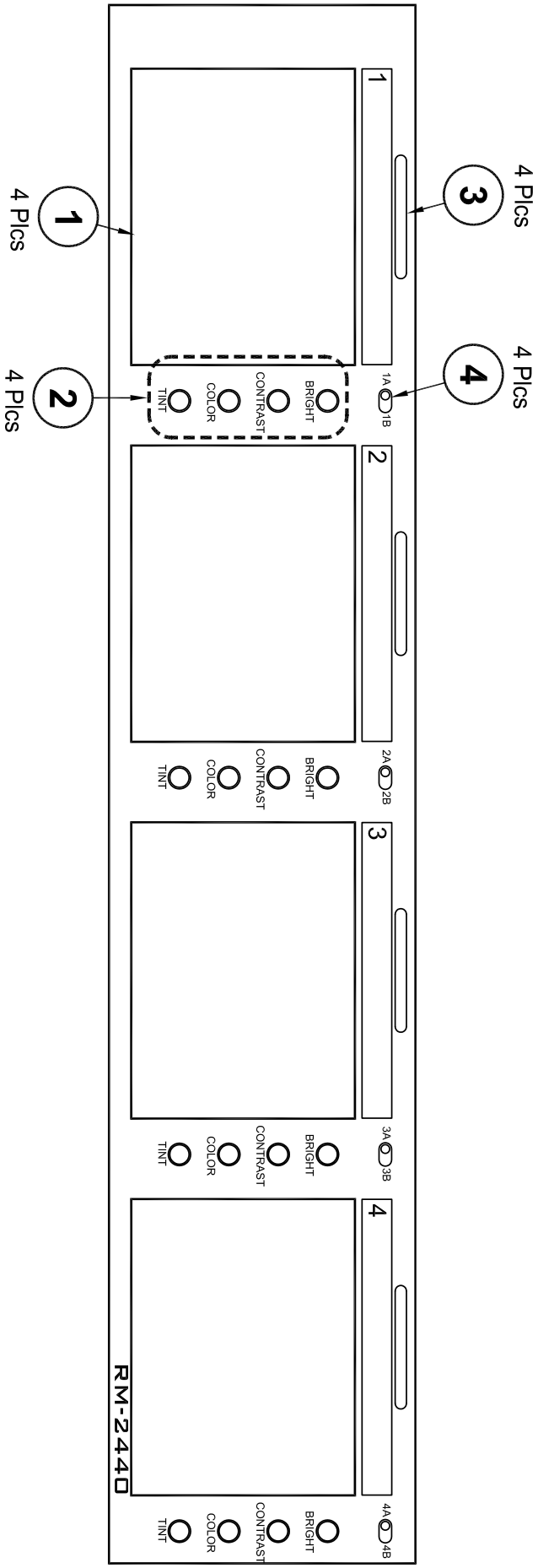

Figure-2a: Front Panel Features

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Rear Panel Features

Please refer to **Figure-2b** on the following page to familiarize yourself with the rear panel features of the **RM-2440** unit. The following sections describe these features and are referenced, by letter, to **Figure-2b**. See **Figure-2c** on page **12** for a top view of the **RM-2440** showing rear panel connector clearance dimensions.

Note about options: Figure-2b shows each of the two optional **SDI Input Modules** (**RMSDI-1** and **RMSDI-2**) installed in channels **1** and **2** and *no* option installed in channels **3** and **4**. The **SDI Input Modules** may be installed in any combination (one per display). Options are selected for monitoring by setting the associated **A/B Source Select Switch** on the front panel (**Item 4**, page **8**) to the **B** position. For each section with an **SDI Input Module** installed, the **CVBS Loop-Through Connector** (**Item C**) will output **CVBS** signals as converted from the **SDI** input. In any I/O section with an **SDI Input Module** option installed, the **B CVBS Input** BNC connector should NOT be used, and it is recommended that it be covered with a connector cap to prevent its use.

A Termination Switch (1A - 4A, 1B - 4B)

This switch terminates the **CVBS Input Connector** as required by your configuration. If you supply downstream equipment from the **CVBS Loop-Through Connector** (**Item C**), then set this switch to the **Hi-Z** position. If *not*, set this switch to the **75Ω** position.

B CVBS Input (IN) Connector (1A - 4A, 1B - 4B)

CVBS video signals may be connected here. **NTSC** or **PAL** standards are accommodated automatically. If signals are connected at both the **A** and **B** inputs within the same I/O section, use the **A/B Source Select Switch** (**Item 4**, page **8**) to select between the two. **Note:** If an **SDI Input Option** module is installed in a **B** section, do NOT use the associated **B CVBS** input.

C CVBS Loop-Through (OUT) Connector (1A - 4A, 1B - 4B)

Signal-through connections to downstream equipment are supplied at these BNC connectors. If you supply downstream equipment from these connectors, ensure that you set the **Termination Switch** (**Item A**) according to your configuration. Note that if an **SDI Input Module** (**Item G**) is installed in the same I/O section, this connector outputs a **CVBS** signal as *converted* from the **SDI Input Connector** (**Item Gc**).

D Option Connector (1-4)

This **DE9** (9-pin) female connector allows you easily install an optional **SDI Input Module** (**Item G**).

E Tally Control Connector

This 25-pin subminiature female "D" connector allows you to use the four front panel **Tally Indication LED**s (**Item 3**, page **10**). Full connection instructions are described on pages **14** and **15**.

F Power Connector

Attach the supplied 110/220-12V external power supply between this connector and mains power.

G Optional SDI Input Modules (RMSDI-1 and RMSDI-2)

There are two models of optional **SDI Input Module**; the **RMSDI-1** and **RMSDI-2**. They are identical except that the **RMSDI-1** does *not* feature a **SDI Output Connector** (**Item Gb**) and must use the **525/625 Select Switch** (**Item Ge**) to select the **NTSC/PAL** format of the input signal (the **RMSDI-2** does this automatically).

Note: See **Figure-2c** on page **12** for depth clearance dimensions of **RM-2440** when **RMSDI** option modules are installed.

Ga CVBS Output (Converted From SDI Input) Connector

When an optional **RMSDI-1** *or* **RMSDI-2** module is installed, this connector outputs **CVBS** signals as *converted* from the **SDI Input Connector** (**Item Gc**). If this output is NOT used, set the associated **Termination Switch** (**Item A**) to **75Ω**.

Gb SDI Output Connector (RMSDI-2 Only)

SDI signal-through connections to down-stream equipment are supplied at this BNC connector. This connector supplies a reclocked replica of the **SDI** input signal.

Gc SDI Input Connector

Connect **SDI** signals to this female BNC connector, which is terminated at **75Ω**.

Gd SDI Lock Indication LED (GREEN)

When a valid (and locked) **SDI** signal is received at the **SDI Input Connector** (**Item Gc**) this LED lights GREEN.

Ge 525/625 (NTSC/PAL) Select Switch (RMSDI-1 Only)

On the **RMSDI-1** (only), this switch is used to manually select for **NTSC** (525 line) or **PAL** (625 line) input signals. Set the switch to the RIGHT to select **PAL** (625 lines), to the LEFT to select **NTSC** (525 lines).

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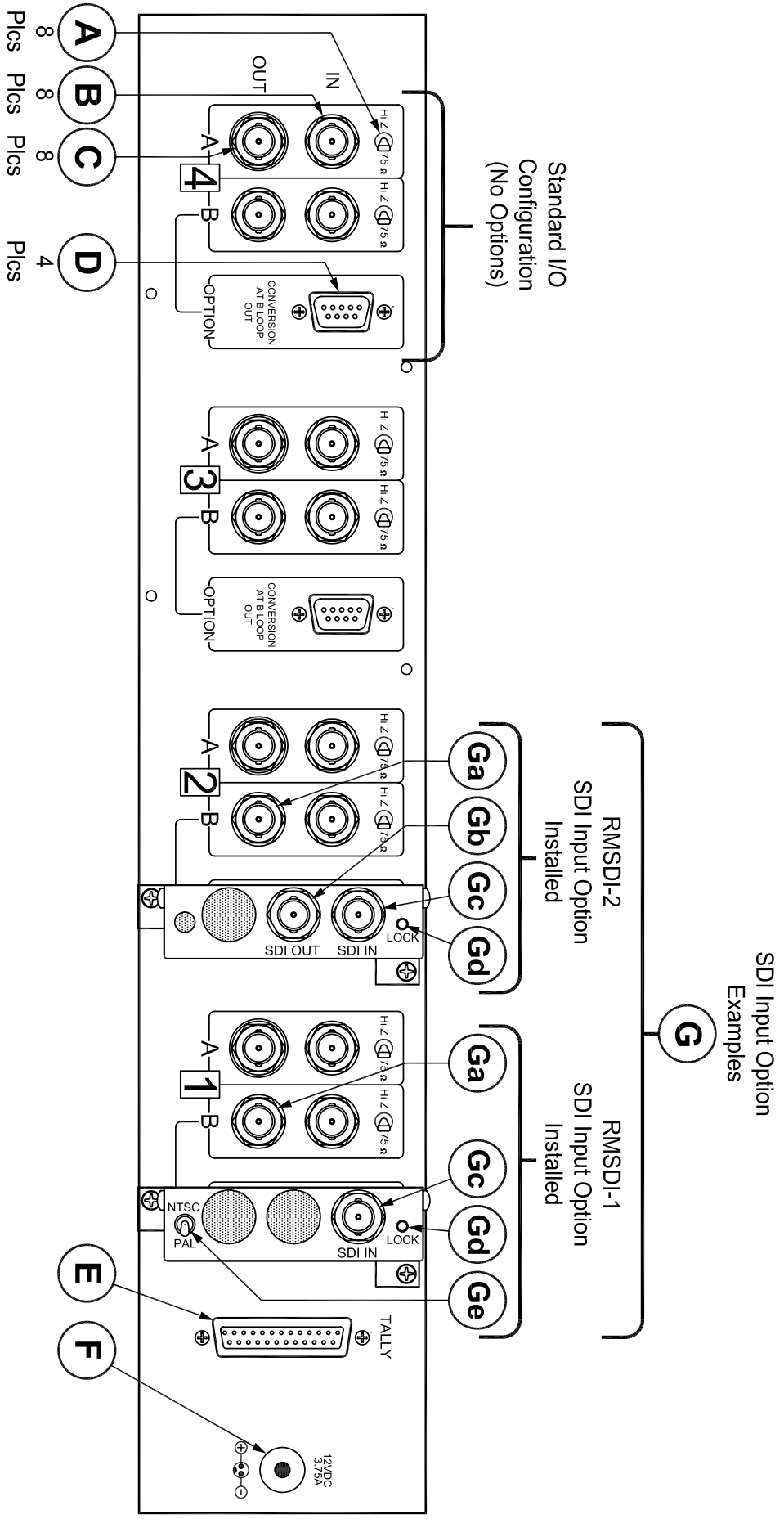

Figure-2b: Rear Panel Features

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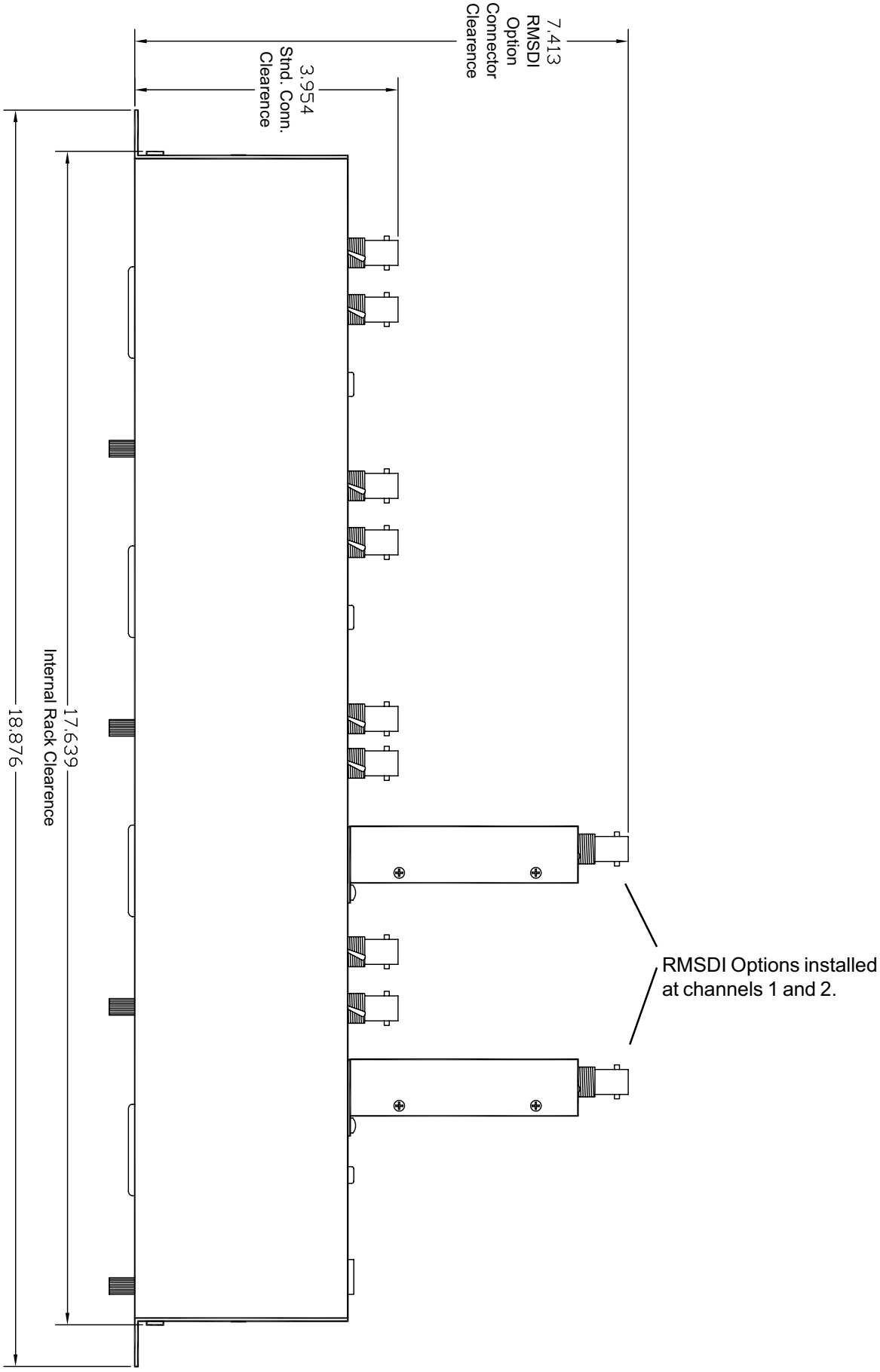

Figure-2c: RM-2440 Top View (Depth and Width Clearance Dimensions)

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Section 3

Technical Information

Tally Control Connector Wiring

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web: www.panoramadtv.com
e-mail: sales@panoramadtv.com

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Tally Control Connector Wiring

A front panel tally LED is associated with each LCD monitor. Interface is provided to the LEDs via the **Tally Control Connector** on the rear panel (**Item E**, page **10**). Tri-color (RED, GREEN, and YELLOW) tally indications are possible by activating the red and green LED sections simultaneously. For connection details, see **Figure-3a** below .

Figure 3-b, on the facing page, shows sample tally connection configurations. You can operate the Tally LEDs by three methods. The three tutorial examples showing **Dry Closure** (internal power), **Positive True Logic Drive** (external power), and **Open Collector** (transistors as switches) are illustrated to show basic operation.

The Tally indicators are capable of displaying three colors. Illuminating the RED or GREEN LEDs separately will result in that tally color. Illuminate the RED and GREEN LEDs simultaneously to achieve a YELLOW tally.

Isolated

Operating the Tally LEDs in an *isolated* configuration (**Figure-3b: Dry Closure**) requires an external (customer provided) power supply and tally system. If your facility currently has a tally system with companion power source, use this method to integrate the RM Monitor tallies with your existing tally matrix.

NOTE: Ensure the LED power supply provides +5 to +12VDC.

Non-Isolated

Operating the Tally LEDs in the *non-isolated* configuration (**Figure-3b: Positive True Logic Drive**) uses the **RM Monitor** internal power supply to provide the tally LED voltage. Connect your tally closures as shown in **Figure-3b** to the respective **RM Monitor** tally connections.

Audio Indication Module Option

An optional audio indication module (**AIM-1**) is available to enable the use of the tally LEDs to indicate audio presence and loss. The **AIM-1** module installs onto the **RM** rear panel tally connector and then receives the audio input from a seperate cable. Contact PANORAMAdtv for more information concerning this option.

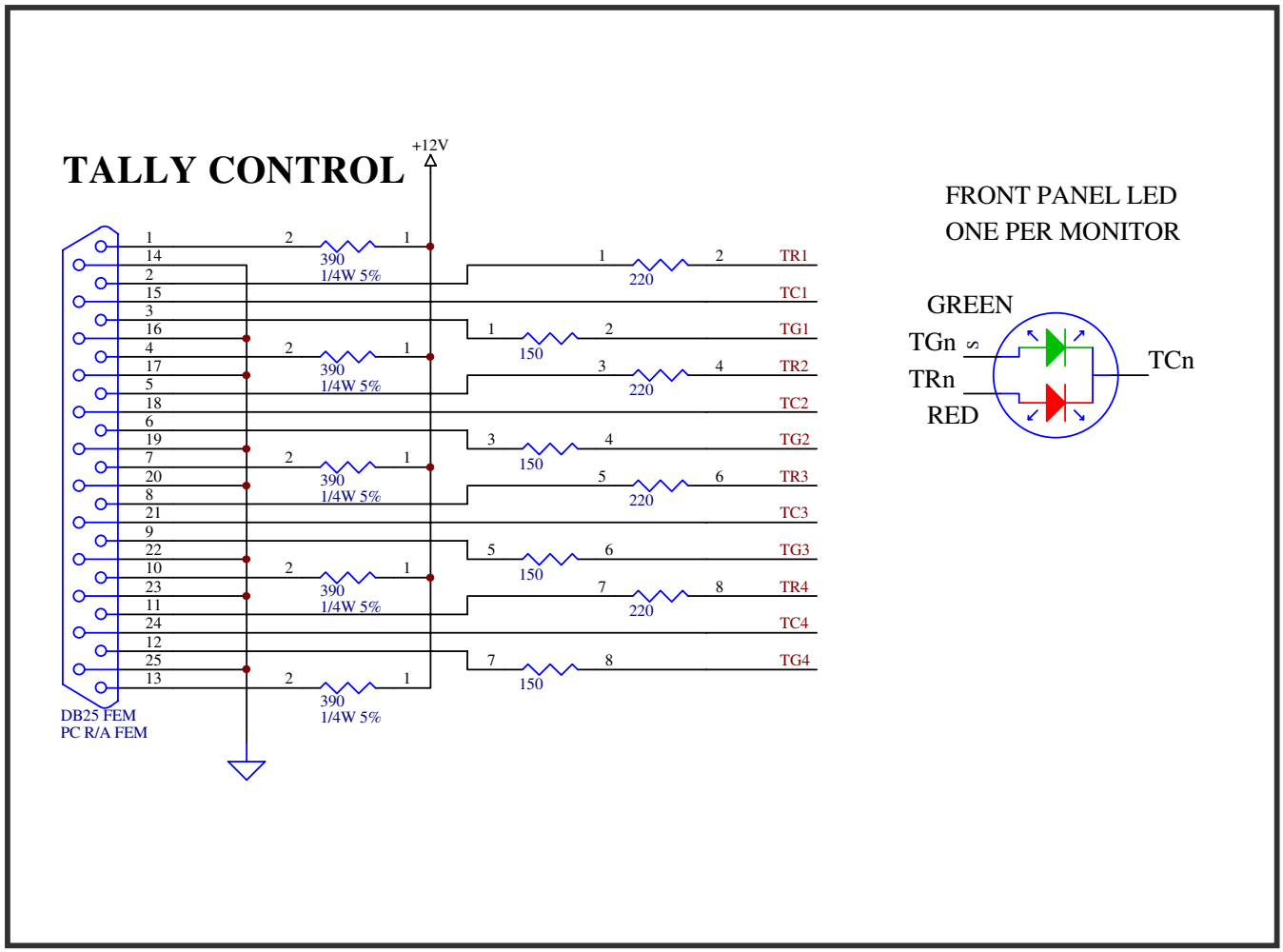

Figure-3a: RM Monitor Tally Control Connector Pin Function

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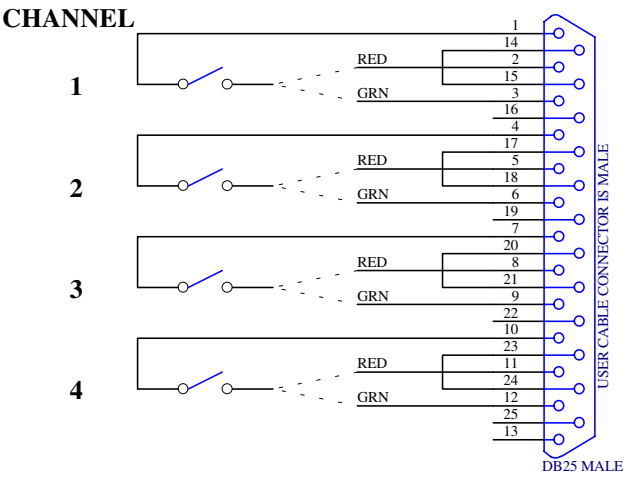
Tally Control Connector Wiring

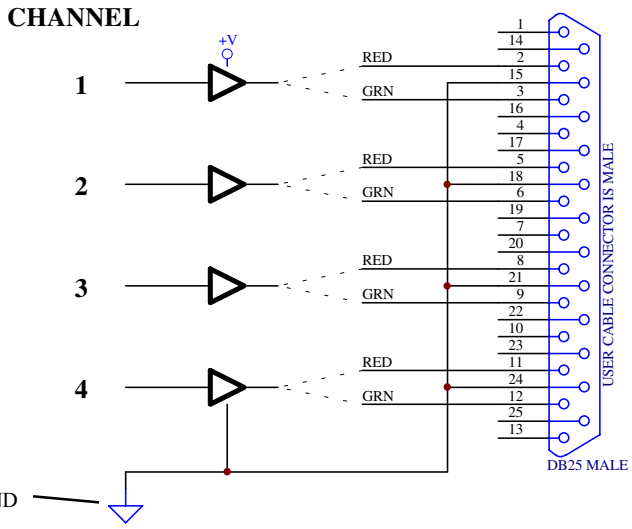
DRY CLOSURE
USING INTERNAL POWER SOURCE

(EITHER/OR BOTH LEDS ON IS OK, BOTH = YELLOW)



POSITIVE TRUE LOGIC DRIVE
USING EXTERNAL POWER 5 - 12VDC

(EITHER/OR BOTH LEDS ON IS OK, BOTH = YELLOW)



OPEN COLLECTOR
TRANSISTOR ON =LED ON

(ONE LED ONLY)

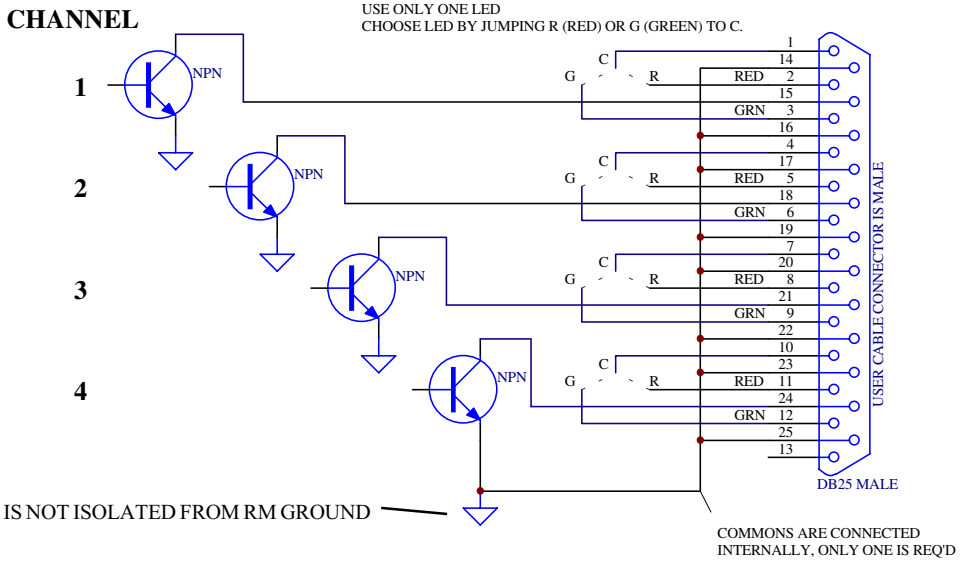


Figure-3b: RM Monitor Sample Tally Connections

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